

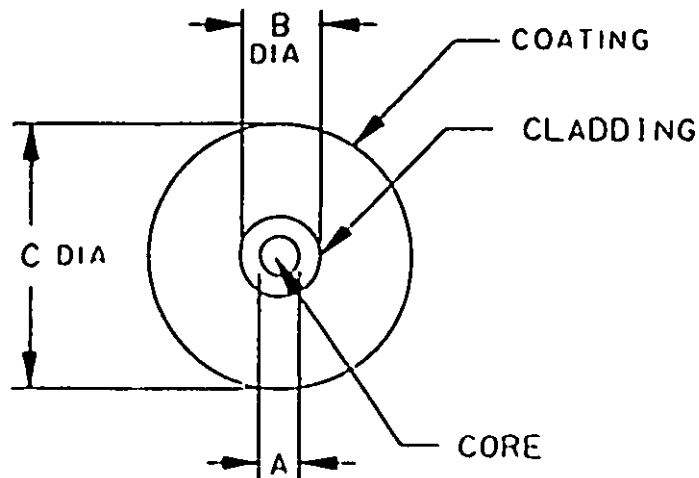
METRIC

MIL-F-49291/6A  
 30 July 1992  
 SUPERSEDING  
 MIL-F-49291/6(NAVY)  
 11 May 1989

MILITARY SPECIFICATION SHEET  
 FIBER, OPTICAL, 62.5/125 MICROMETERS, RADIATION HARDENED (METRIC)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

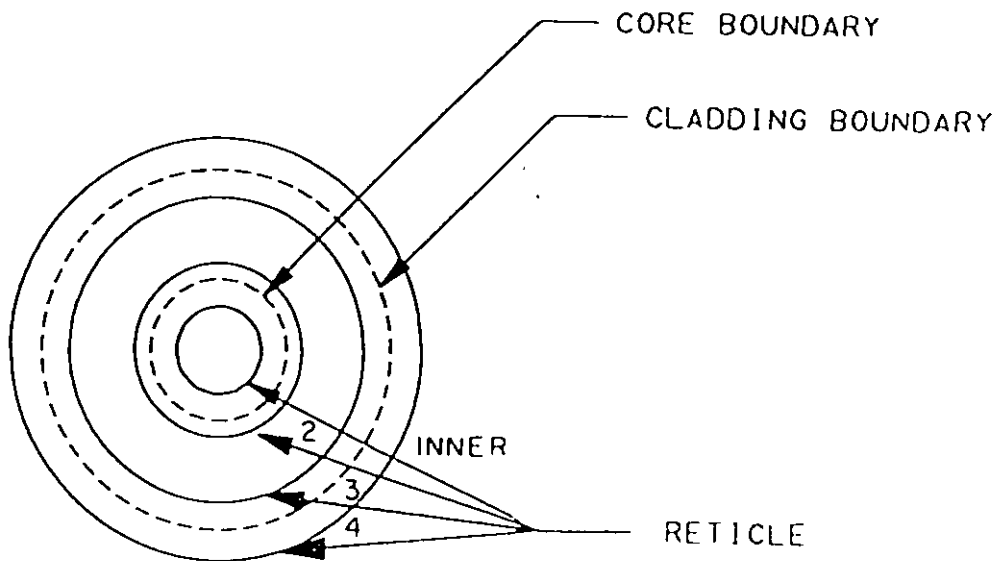
The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-F-49291



Fiber index	PIN	Dimensions		
		A	B	C
Graded, at 400 MHz and -28 to +85°C	M49291/6-01	62.5 $\pm$ 3	125 $\pm$ 1	250 $\pm$ 15
Graded, at 400 MHz and -54 to +85°C	M49291/6-02	62.5 $\pm$ 3	125 $\pm$ 1	250 $\pm$ 15
Space qualified at 400 MHz and -54 to +85°C	M49291/6-02S	62.5 $\pm$ 3	125 $\pm$ 1	250 $\pm$ 15
Graded, at 500 MHz and -54 to +85°C	M49291/6-03	62.5 $\pm$ 3	125 $\pm$ 1	250 $\pm$ 15

NOTE: Dimensions are in micrometers.

FIGURE 1. Dimensions and configuration of optical fiber construction.



Circle	Diameter of circle
Inner	59.5 micrometers
Second	65.5 micrometers
Third	124 micrometers
Fourth	126 micrometers

NOTE: Dimensions are in micrometers.

FIGURE 2. Tolerance fields.

REQUIREMENTS:

Classification:

Type: I.  
Class: 1.  
Composition: A.  
Size: IV.  
Wavelength: B.

Dimensions and configuration:

Diameter: See figures 1 and 2. (Diameter requirements are based on selecting fibers with end-point tolerances of  $125 \pm 1$  micrometers from production with a  $125 \pm 2$  micrometers tolerance.)

Ovality:

Core:  $\leq 6$  percent.  
Cladding:  $\leq 2$  percent.

Offset:

Core-to-cladding:  $\leq 4$  micrometers.  
Fiber-to-coating:  $\leq 10.5$  micrometers (OCCR  $\geq 0.70$ ).

Maximum percent of coating diameter change at the splice points: Not applicable.

Splices: Not allowed.

Fiber mass/unit length (kg/km): 0.1 kg/km maximum.

Change in optical transmittance: Measurements made at 1300 nm  $\pm 20$  nm.

Attenuation rate:

$\leq 1.0$  decibel per kilometer (dB/km) at 1300  $\pm 20.00$  nm.  
 $\leq 3.5$  dB/km at 850  $\pm 25.00$  nm.

Numerical aperture: 0.275  $\pm 0.015$  at 850 nanometers  $\pm 25$  nm.

Bandwidth:

400 MHz.km at 1300 nm  $\pm 20$  nm (M49291/6-01, M49291/6-02, M49291/6-02S).  
500 MHz.km at 1300 nm  $\pm 20$  nm (M49291/6-03).

Temperature range:

Operating:  $-54^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  or  $-28^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .  
Storage:  $-62^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

Transient attenuation: Applicable.

Fluid immersion aging: Not applicable.

Dynamic tensile strength: Applicable.

Torsion: Applicable.

Flexure: Applicable.

Fungus test: Applicable.

Nuclear radiation resistance: The nuclear radiation resistance characteristics of this optical fiber are classified and shall be obtained from the qualifying activity. Application to receive these requirements must be made through the US Naval Sea Systems Command, ATTN: SEA 06KR22, Washington, DC 20362. Information concerning security clearance classification and "need to know" must be detailed in the request.

Dispersion: The zero dispersion wavelength shall be greater than 1320 nm and less than 1350 nm. The dispersion slope at the zero dispersion wavelength shall be less than  $0.12 \text{ ps/nm}^2\text{km}$ .

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The following requirements and tests are applicable to space qualified PINs:

- a. Radiation: Only the steady-state response test applies. The dose rate shall be 50 rads (Si)/minute with a total dose of 10 krad(Si).
- b. Torsion.
- c. Flexure.
- d. Storage temperature.
- e. Thermal vacuum outgassing.
- f. Odor.
- g. Toxicity.

PINs (see figure 1 and table I):

M49291/6-01  
M49291/6-02  
M49291/6-02S  
M49291/6-03

Table I. Supersession data.

PIN	Superseding
M49291/6-01	D49291/01-006 1/
M49291/6-02	None
M49291/6-02S	None
M49291/6-03	None

1/ PIN is as shown in MIL-F-49291/6(NAVY)

Revision letters are not used to denote changes due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:

Army - CR  
Navy - SH  
Air Force - 85  
NASA - NA

Preparing activity:

Navy - SH

Agent:

DLA - ES

Review activities:

Army - MI, SC  
Navy - AS  
DLA - ES

(Project 6010-0036-7)

User activity:

Air Force - 17